

## CLAIMS

What is claimed is:

1. An apparatus for adding and removing liquid reagent to and from a sample comprising:
  - 5 a flat surface supporting the sample;
  - a chamber forming a cavity on said flat surface, said chamber being releasably sealed to said flat surface;
  - a fluid port in the wall of said chamber through which fluids can be added or removed;
  - 10 a conduit through which a source of negative or positive air pressure can be communicated; and
  - an actuator capable of moving the fluid port and conduit relative to each other to engage said conduit and fluid port to each other so that the two are in fluid communication with each other.
- 15 2. An apparatus as recited in claim 1 wherein said flat surface is a microscope slide.
3. An apparatus as recited in claim 1 wherein more than one fluid port is located in the wall of said chamber.
4. An apparatus as recited in claim 3 further comprising a second conduit through  
20 which a liquid can be communicated to at least one of said fluid ports.
5. An apparatus as recited in claim 1 wherein the chamber wall further comprises a valve that is positioned at the fluid port.

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6. An apparatus as recited in claim 5 wherein the conduit further comprises a piston capable of opening said valve when said conduit and fluid port are in communication with each other.
7. An apparatus as recited in claim 6 further comprising a well capable of holding  
5 an aliquot of reagent over the fluid port.
8. An apparatus as recited in claim 7 wherein the valve comprises a flexible element below the port.
9. An apparatus as recited in claim 8 wherein the flexible element is an extension of a gasket of the chamber which seals against the flat surface.
- 10 10. An apparatus as recited in claim 1 further comprising a well capable of holding an aliquot of reagent over the fluid port.
11. An apparatus as recited in claim 10 wherein the chamber wall further comprises a valve that is positioned at the fluid port.
12. An apparatus as recited in claim 1 comprising multiple chambers, the chambers  
15 and actuator moving relative to each other to position a selected chamber at the actuator.
13. An apparatus for adding liquid reagent to and from a sample comprising:  
a flat surface supporting the sample;  
a chamber forming a cavity on said flat surface, said chamber being  
20 releasably sealed to said flat surface; and

a fluid port in the wall of said chamber through which fluids can be added, said fluid port further comprising a reagent well capable of holding an aliquot of reagent prior to the reagent passing into the cavity.

14. An apparatus as recited in claim 13 wherein the chamber further comprises a  
5 valve that is positioned at the fluid port.
15. An apparatus as recited in claim 14 wherein the valve comprises a flexible  
element below the port, the membrane being adapted to be opened by a piston  
extending through the fluid port.
16. An apparatus as recited in claim 15 wherein the flexible element is an extension  
10 of a gasket of the chamber which seals against the flat surface.
17. An apparatus as recited in claim 13 comprising plural fluid ports in the wall.
18. An apparatus as recited in claim 13 wherein the reagent well is conical and is  
adapted to seal against a conduit moved into position against the well.